Terms of reference for an environmental impact statement:

Inland Rail – Calvert to Kagaru project
December 2017

Queensland Government

The Department of State Development

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Part A. About these terms of reference

1. Statutory basis

1.1. The Coordinator-General has declared the Inland Rail – Calvert to Kagaru project (the project) to be a 'coordinated project for which an environmental impact statement (EIS) is required' under section 26(1)(a) of the *State Development and Public Works Organisation Act 1971* (SDPWO Act). This declaration initiates the statutory environmental impact assessment procedure of Part 4 of the SDPWO Act, which requires a proponent to prepare an EIS for the project.

1.2. These terms of reference (TOR) set out the matters the proponent must address in an EIS for the project and are approved by the Coordinator-General under section 30 of the SDPWO Act.

2. Accredited process for controlled actions under Commonwealth legislation

2.1. On 21 June 2017, the Commonwealth Minister for the Environment and Energy determined the Inland Rail – Calvert to Kagaru project is a 'controlled action' under the *Environment Protection and Biodiversity Conservation Act 1999* (Cwlth) (EPBC Act), due to the likely potential impacts on matters of national environmental significance (MNES) (reference number EPBC 2017/7944).

2.2. The EIS process has been accredited under the Bilateral Agreement for the assessment of the project under the EPBC Act, hence the EIS must state the controlling provision for the project and describe the particular aspects of the environment that led to the controlled action decision.

2.3. The assessment of the controlling provisions, mitigation measures and any offsets for residual impacts must be described and illustrated in a stand-alone report in the EIS that fully addresses the matters relevant to the controlling provision. Requirements for MNES are set out in section 11 of this TOR.

3. EIS guidelines

3.1. This TOR should be read in conjunction with *Preparing an environmental impact statement: Guideline for proponents* (refer to Appendix 1), which explains the following:

(a) participants in the EIS process

(b) consultation requirements

(c) EIS format and copy requirements.

3.2. In addition, subject-specific guidelines are referenced throughout this TOR. Refer to Appendix 1 for a list of these guidelines.

4. More information

4.1. For information about the project or the EIS process conducted under the SDPWO Act, visit **www.statedevelopment.qld.gov.au/cg**

Part B. Content of the EIS

5. General approach

5.1. The objectives of the EIS are to ensure that all relevant environmental, social and economic impacts of the project are identified and assessed, and to recommend mitigation measures to avoid or minimise adverse impacts. The EIS should demonstrate that the project is based on sound environmental principles and practices.

5.2. For the purposes of the EIS process, 'environment' is defined in Schedule 2 of the SDPWO Act and includes social and economic matters.

5.3. The detail at which the EIS deals with matters relevant to the project should be proportional to the scale of the impacts on environmental values. When determining the scale of an impact, consider its intensity, duration, cumulative effect, irreversibility, the risk of environmental harm, management strategies and offsets provisions.

5.4. The EIS is to be generally in accordance with relevant policies, standards and guidelines. Application of such guidelines, standards and policies will be confirmed throughout the development of the EIS in consultation between the Coordinator-General and the proponent and advisory agencies.

6. Mandatory requirements of an EIS

6.1. For all relevant matters, the EIS must identify and describe the environmental values that must be protected. Environmental values are specified in section 9 of the *Environmental Protection Act 1994* (EP Act), the Environmental Protection Regulation 2008 (EP Regulation), environmental protection policies (EPPs), Water Resource Plans, State Planning Policy (SPP) and relevant guidelines.[1]

6.2. The assessment should cover both the short and long terms and state whether any relevant impacts are likely to be irreversible. The assessment should also discuss scenarios of unknown and unpredictable impacts.

6.3. Provide all available baseline information relevant to the environmental values of the project, including seasonal variations. Provide details about the quality of the information provided, in particular: the source of the information; how recent the information is; how the reliability of the information was tested; and any uncertainties in the information.

6.4. Provide detailed strategies in regard to all project-specific matters (as described in section 11 of this TOR) for the protection, or enhancement as desirable, of all relevant environmental values in terms of outcomes and possible conditions that can be measured and audited. In general, the preferred hierarchy for managing likely impacts is: (a) to avoid; (b) to minimise/mitigate; and (c) to offset once (a) and (b) have been applied. Management of impacts should be tailored to the management of hierarchy relevant to the particular EPP for the value or matter. Where relevant, strategies should be described in the context of Department of Environment and Heritage Protection (DEHP) 'model conditions'.

[1] Refer to Appendix 1 for list of potentially relevant guidelines.

6.5. Impact minimisation measures should include ongoing monitoring and proposals for an adaptive management approach, as relevant, based on monitoring. The proposed measures should give confidence that, based on current technologies, the impacts can be effectively minimised over the long-term.

6.6. Each matter assessed in the EIS (as described in section 11 of this TOR) should include a concise summary and suitable assessment of the nature, magnitude and duration of the potential direct and indirect and cumulative impacts of the project and the measures proposed by the proponent to avoid, minimise, mitigate, manage and/or offset those impacts.

6.7. Present feasible alternatives of the project's configuration (including individual elements) that may improve environmental outcomes. Discuss the consequences of not proceeding with the project.

6.8. Assess the extent to which the construction and operation of the project meets all statutory and regulatory requirements of the State and that the intended outcomes are consistent with current state policies and guidelines. If there is conflict, provide comment on the planning merit that supports the project.

7. Further requirements of an EIS

7.1. The proponent must identify in the EIS the scope of government approvals sought through the EIS process.

7.2. The assessment and supporting information should be sufficient for the Coordinator-General and administering authority to decide whether an approval sought through the EIS process should be granted. Where applicable, sufficient information should be included to enable approval conditions to be developed in relation to later approvals under relevant State and Commonwealth legislation, including but not limited to the *Planning Act 2016* (PA), the *Water Act 2000* (Water Act), *Nature Conservation Act 1992* (NC Act), *Vegetation Management Act 1999* (VMA), *Fisheries Act 1994* (Fisheries Act)*, Land Act 1994, Forestry Act 1959*, *Biosecurity Act 2014* (Biosecurity Act), *Queensland Heritage Act 1992*, *Transport Infrastructure Act 1994, Mineral Resources Act 1989*, EP Act, *Regional Planning Interests Act 2014, Environmental Offsets Act 2014* (EO Act) and EPBC Act.[2]

7.3. Cumulative[3] impacts should be assessed over time and in combination with impacts created by the activities of other local, upstream and downstream land uses, major projects under construction, and proposed significant development progressing through the statutory assessment processes for which information is publicly available. The EIS should also propose means to suitably address predicted cumulative impacts. Outline ways in which the cumulative impact assessment and management could be subsequently be progressed further on a collective basis.

7.4. Include a consolidated description of all the proponent's commitments to implement management measures (including monitoring programs). Should the project proceed, these should be able to be carried over into the approval conditions as relevant.

[2] Legislation and department names are subject to change over the life of the Coordinator-General's assessment.
[3] Cumulative impact is defined as 'combined impacts from all relevant sources (developments and other activities in the area).

7.5. Provide all geographical coordinates throughout the EIS in latitude and longitude against the Geocentric Datum of Australia 1994 (GDA94). It is preferred that all spatial data presented in the EIS is made available to the Coordinator-General in the appropriate electronic form such as shapefiles.

7.6. An EIS should also describe the expected benefits and opportunities associated with the project.

7.7. An appropriate public consultation program is essential to the impact assessment process. The proponent should consult with Local, State and Commonwealth government agencies, and potentially affected local communities.

7.8. The EIS should describe the consultation that has taken place and how the responses from the community and agencies have been incorporated into the design and outcomes of the project.

7.9. Include, as an appendix, a public consultation report detailing how the public consultation plan was implemented, and the results of the implementation.

8. Executive summary

8.1. The executive summary should describe the project and convey the most important and preferred aspects and environmental management options relating to the project in a concise and readable form. It should use plain English, avoid jargon, be written as a stand-alone document and be structured to follow the EIS. It should be easy to reproduce and distribute on request to those who may not wish to read or purchase the whole EIS.

9. Introduction

9.1. Clearly explain the function of the EIS, why it has been prepared and what it sets out to achieve. Include an overview of the structure of the document.

Project proponent

9.2. Describe the following:

(a) the proponent's full name, postal address and ABN

(b) the nature and extent of business activities

(c) proponent's experience

(d) proponent's (including directors) environmental record in Australia, including a list of any breach of relevant environmental laws during the previous ten years

(e) proponent's environmental, health, safety and community policies

(f) experience and qualifications of consultant and sub-consultants engaged by the proponent to complete the EIS.

The environmental impact assessment process

9.3. Provide an outline of the environmental impact assessment process, including the role of the EIS in the Coordinator-General's decision-making process. The information in this section is required to ensure readers are informed of the process to be followed and are aware of any opportunities for input and participation.

9.4. Inform the reader how and when properly made public submissions on the EIS will be addressed and taken into account in the decision-making process.

Project approvals process

9.5. Describe the approvals required to enable the project to be constructed and operated. Explain how the environmental impact assessment process (and the EIS itself) informs the issue of the leases/licences/permits required by the proponent before construction can commence. Provide a flow chart indicating the key approvals and opportunities for public comment.

9.6. Inform the reader of how the SDPWO Act, EP Act and the PA interact, with reference to the project. Describe how the EIS process informs approvals required for the project, and how a properly made submission on the EIS relates to application processes and later approvals under the PA and EP Act respectively.

9.7. Identify any statutory approvals, permits, licences and authorities (including requirement for owner's consent) that will be required for the project to use land.

9.8. Describe the assessment process under the Bilateral Agreement between the Commonwealth and the State of Queensland under section 45 of the EPBC Act relating to environmental assessment.

9.9. The State Development Assessment Provisions (SDAP) prescribed in the Planning Regulation 2017 set out the matters of interest to the State for development assessment where the chief executive of the PA is the assessment manager or referral agency for development applications. If the proponent intends to satisfy the information requirements of future development assessment decisions under SDAP for any component of the project during this coordinated project EIS process, the material provided in accordance with sections 10-11 of this TOR should be sufficient to permit those assessments to be completed for that project component. Refer to Appendix 1 for further information on SDAP requirements.

9.10. The EIS will provide, where relevant, the information required under section 125 of the EP Act in support of the project's environmental authority application for Environmentally Relevant Activities (ERAs). Any ERAs to be conducted as part of the project should be listed separately with appropriate ERA number, activity name and required threshold (see EP Regulation, Schedule 2 for a detailed list of ERAs). The assessment and supporting information should be sufficient for the administering authority to decide whether an approval should be granted. Environmental values and detailed approval requirements are specified in the EP Act, the EP Regulation, environmental protection policies and relevant guidelines.

10. Project description

Proposed development

10.1. The EIS must describe and illustrate at least the following specific information about the proposed project:

(a) project title

(b) project description

(c) project objectives

(d) expected capital expenditure

(e) rationale for the project

(f) regional and local context of the project's footprint (with maps at suitable scales)

(g) relationship to other projects for the proposed Inland Rail Programme between Melbourne and Brisbane

(h) relationship to other coordinated projects, major projects and/or developments (which are progressing through planning and approval processes and public information is available)

(i) workforce numbers to be employed by the project during its various phases

(j) where personnel would be accommodated and, where relevant, the likely recruitment arrangements to be adopted

(k) proposed timing and overall duration of the project including construction staging and likely schedule of works.

Site description

10.2. Provide real property descriptions of the preferred alignment.

10.3. Describe and map at suitable scales key transport infrastructure including state-controlled roads, local roads, rail (including tunnels), air, and other infrastructure or services (including gas and water pipelines, and electricity transmission and distribution powerlines) existing, under construction or proposed which may be impacted within the study area.

10.4. Describe and illustrate the topography of the preferred alignment and surrounding area, and highlight any significant features shown on the maps. Include and name all waterways, including watercourses, rivers and creeks. Maps should include a scale, and have contours at suitable increments relevant to the scale, location, potential impacts and type of project, shown with respect to Australian Height Datum (AHD) and drafted to GDA94.

10.5. Describe and illustrate specific information about the proposed project including the precise location of the preferred alignment in relation to designated areas, such as transport corridors, protected areas and areas of regional interest and agricultural land uses identified in the *Queensland Agricultural Land Audit* (refer to Appendix 1). Consideration should also be given to Key Resource Areas (KRAs), petroleum and gas pipelines, explosive magazines (storage and manufacturing facilities) abandoned mines and mining (exploration and production) tenures.

10.6. Where relevant, describe and map in plan and cross-sections the geology and landforms, including catchments, of the project area. Show geological structures, such as aquifers, faults and economic resources (such as coal, mineral and petroleum resources, agricultural products and KRAs) that could have an influence on, or be influenced by, the project's activities.

10.7. Where relevant, describe, map and illustrate soil types and profiles of the project area at a scale relevant to the proposed project. Identify soils that would require particular management due to wetness, erosivity, depth, acidity, salinity, contamination or other relevant features.

10.8. Plans and drawings provided must be detailed enough to enable the Coordinator-General and advisory agencies to adequately assess the impacts of the project.

10.9. Describe the planning schemes, regional plans, state policies and government priorities for the preferred alignment, including those that have been publicly notified. This description should include those instruments currently under development and likely to be implemented within planning and construction timeframes.

Proposed construction and operations

10.10. Describe the following information about the proposed project:

(a) all pre-construction activities (e.g. vegetation clearing, site access, State land approvals and owner consent requirements, interference with watercourses and floodplain areas, including wetlands)

(b) existing infrastructure and easements on the preferred alignment

(c) the proposed construction methods, associated equipment and techniques

(d) location, design and capacity of water supply, wastewater conveyance and treatment, telecommunications, power generation, accommodation of site facilities and transmission infrastructure

(e) any infrastructure alternatives, justified in terms of ecologically sustainable development (including energy, water conservation and wastewater management)

(f) hours of operation for proposed construction works, including night time works

(g) the sequencing and staging of activities

(h) the capacity of high-impact plant and equipment, their chemical and physical processes, and chemicals, explosives or hazardous materials to be used

(i) the known locations of new or altered works and structures and infrastructure necessary to enable the construction and operation of the development

(j) any activity that is a prescribed ERA

(k) an estimate of quarry materials required for the project and potential sources

(l) the range of land uses and site layout

(m) built form and design specifics

(n) operation detail (e.g. hours of operation for project components)

(o) the commissioning process

(p) landscaping and the rehabilitation of affected areas after construction and during operation

(q) proposed upgrades, realignments, relocation, deviation or restricted access to roads and other infrastructure (e.g. water, electricity, telecommunications, sewerage)

(r) location and scale of parking requirements.

Infrastructure requirements

Objectives

The project should provide necessary infrastructure to service the development that:

(a) maintains or enhances services to existing users

(b) ensures any required works are compatible with existing infrastructure.

10.11. Describe with concept and layout plans, requirements for new infrastructure, or the upgrading and/or relocating of existing infrastructure to service the project. Infrastructure to be considered should include sewerage and water supply, energy supply, telecommunications, stormwater, waste disposal and locations of any infrastructure easements. Describe the timing of requirements for this infrastructure.

10.12. Describe the typical service corridors or clearances for utilities such as sewerage, potable water reticulation, recycled water mains and petroleum and gas pipelines in relation to other services.

10.13. Concept and layout plans should also include existing infrastructure relevant to the project.

11. Assessment of project specific matters

Matters of national environmental significance

Background and context

11.1. This section should provide a stand-alone description and detailed assessment of the impacts of the project on the controlling provision for the project under the EPBC Act inclusive of any avoidance, mitigation and offset measures.

11.2. The Commonwealth Minister for the Environment and Energy (the Commonwealth Minister) has determined that the project (EPBC 2017/7944) is likely to impact upon listed threatened species and communities (sections 18 and 18A of the EPBC Act).

11.3. The EIS must be prepared in accordance with the bilateral agreement between the Commonwealth of Australia and the State of Queensland relating to environmental assessment.[4] This will enable the EIS to meet the impact assessment requirements under both Commonwealth and Queensland legislation.

11.4. The statutory obligations for conduct of the EIS process under the bilateral agreement are set out in Part 13 of the State Development and Public Works Organisation Regulation 2010.

11.5. Once the draft EIS has been prepared to the satisfaction of the Coordinator-General and MNES addressed to the satisfaction of the Australian Government Department of the Environment and Energy, the draft EIS will be made available for public comment.

[4] http://www.environment.gov.au/system/files/pages/b44206bc-d8e5-450b-a05e-4d7c26d8afa1/files/qld-bliateral-agreement-assessment-amended-2014.pdf

11.6. The proponent may be required by the Coordinator-General or the Department of the Environment and Energy to provide additional material to address matters raised in submissions on the EIS.

11.7. At the conclusion of the environmental assessment process, the Coordinator-General will provide a copy of the report evaluating the environmental impacts of the project to the Commonwealth Minister.

11.8. After receiving the evaluation report and sufficient information about the relevant impacts of the action, the Commonwealth Minister for the Environment and Energy has 30 business days to consider whether the impacts of the proposal are acceptable, or not, and to decide whether or not to approve each controlling provision.

11.9. The Commonwealth Minister's decision under Part 9 of the EPBC Act is separate to the approval decisions made by Queensland state agencies and other agencies with jurisdiction on state matters.

Information requirements

11.10. Consideration must be given to any relevant policy statements available from **www.environment.gov.au**, including:

(a) *Matters of National Environmental Significance: Significant impact guidelines 1.1*[5]

(b) *Environment Protection and Biodiversity Conservation Act 1999 Environmental Offsets Policy*[6] and

(c) any approved conservation advice, recovery plans and threat abatement plans (as relevant) for listed threatened species and ecological communities.

11.11. The EIS must:

(a) assess all the relevant impacts that the action has, will have or is likely to have, including on receiving environments of the project

(b) provide enough information about the action and its relevant impacts to allow the Commonwealth Minister to make an informed decision on whether or not to approve the action

(c) address the matters set out in Schedule 4 of the Environment Protection and Biodiversity Conservation Regulations 2000 (Cwlth) (EPBC Regulations).

11.12. The MNES section of the EIS should bring together assessments of impacts from other chapters and produce a stand-alone assessment in a format suited for assessment under the EPBC Act.

11.13. The project should initially be assessed in its own right, followed by an assessment of the cumulative impacts related to existing major projects and/or development that is progressing through a publicly available planning and approval process. Cumulative impacts not solely related to the project development should also be described.

[5] http://www.environment.gov.au/system/files/resources/42f84df4-720b-4dcf-b262-48679a3aba58/files/nes-guidelines_1.pdf
[6] http://www.environment.gov.au/system/files/resources/12630bb4-2c10-4c8e-815f-2d7862bf87e7/files/offsets-policy_2.pdf

11.14. Predictions of the extent of threat (risk), impact and the benefits of any mitigation measures proposed, should be based on sound science and quantified where possible. All sources of information relied upon should be referenced.

11.15. An estimate of the reliability of any predictions should be provided.

11.16. Any positive impacts of the project should be identified and evaluated.

11.17. The extent of any new field work, modelling or testing should be commensurate with risk and should be such that when used in conjunction with existing information, provides sufficient confidence in predictions that well-informed decisions can be made.

11.18. In accordance with Schedule 4 of the EPBC Regulations, feasible project alternatives must be discussed, including:

(a) if relevant, the alternative of taking no action

(b) a comparative description of the impacts of each alternative on the triggered MNES protected by the controlling provision

(c) sufficient detail to make clear why any alternative or option is preferred to another.

11.19. Short, medium and long-term advantages and disadvantages of the alternatives or options must be discussed.

11.20. The information provided must include details of any proceedings under a Commonwealth, State or Territory law for the protection of the environment or the conservation and sustainable use of natural resources against:

(a) the person proposing to take the action

(b) for an action for which a person has applied for a permit, the person making the application.

If the person proposing to take the action is a corporation, details of the corporation's environmental policy and planning framework must also be included.

11.21. The economic and social impacts of the action, both positive and negative, must be summarised. Matters of interest should include:

(a) consideration at the local, regional and national levels

(b) any public consultation activities undertaken, and their outcomes

(c) any consultation with indigenous stakeholders

(d) identification of affected parties and communities that may be affected and a description of the views of those parties and communities

(e) project economic costs and benefits of the project and project alternatives, including the basis for their estimation through cost/benefit analysis or similar studies, and

(f) employment and other opportunities expected to be generated by the project in each of the construction and operational phases.

11.22. The EIS must provide background to the action and describe in detail all components of the action for example (but not limited to), the construction, operation and (if relevant) decommissioning components of the action. This must include the location of all works to be undertaken (including associated offsite works and infrastructure), structures to be built or elements of the action that may have impacts on MNES.

11.23. The description of the action must also include details on how the works are to be undertaken (including stages of development and their timing) and design parameters for those aspects of the structures or elements of the action that may have relevant impacts.

11.24. The EIS must also provide details on the current state of groundwater and surface water in the region as well as any use of these resources.

Listed threatened species and communities

11.25. The EIS must describe the listed threatened species and ecological communities identified below (including EPBC Act status, distribution, life history and habitat).

11.26. The EIS must consider and assess the impacts to the listed threatened species and ecological communities identified in section 11.29 and 11.31 (including EPBC Act status, distribution, life history and habitat and any others that are found to be or may potentially be present in areas that may be impacted by the project. Impacts from each component of the project of relevance to each listed threatened species or ecological community should be identified. Impacts may result from:

(a) a decrease in the size of a population or a long-term adverse effect on an ecological community

(b) reduction in the area of occupancy of the species or extent of occurrence of the ecological community

(c) fragmentation of an existing population or ecological community

(d) disturbance or destruction of habitat critical to the survival of the species or ecological community

(e) disruption of the breeding cycle of a population

(f) modification, destruction, removal, isolation or reduction of the availability or quality of habitat to the extent that the species is likely to decline

(g) modification or destruction of abiotic (non-living) factors (such as water, nutrients or soil) necessary for the ecological community's survival

(h) the introduction of invasive species that are harmful to the species or ecological community becoming established

(i) interference with the recovery of the species or ecological community.

11.27. The EIS should describe any mitigation measures proposed to reduce the impact on the listed threatened species and ecological communities and proposed mitigation measures. Supporting evidence should be provided to demonstrate the appropriateness of mitigation measures proposed. Where the likely success of mitigation measures cannot be supported by evidence, identify contingencies in the event the mitigation is not successful.

11.28. The EIS should describe any offsets proposed to compensate for residual impacts.

List of potential listed threatened species and their status

11.29. The EIS must address impacts on, but not limited to, the following listed threatened species for the proposed action:

(a) Regent honeyeater (*Anthochaera phrygia*) – critically endangered

(b) Australasian bittern (*Botaurus poiciloptilus*) – endangered

(c) curlew sandpiper (*Calidris ferruginea*) – critically endangered

(d) Coxen's fig-parrot (*Cyclopsitta diophthalma coxeni*) – endangered

(e) eastern bristlebird (*Dasyornis brachypterus*) – endangered

(f) red goshawk (*Erythrotriorchis radiatus*) – vulnerable

(g) squatter pigeon (southern subspecies) (*Geophaps scripta scripta*) – vulnerable

(h) painted honeyeater (*Grantiella picta*) – vulnerable

(i) swift parrot (*Lathamus discolor*) – critically endangered, marine

(j) eastern curlew, far eastern curlew (*Numenius madagascariensis*) – critically endangered, marine, migratory

(k) black-throated finch (southern) (*Poephila cincta cincta*) – endangered

(l) Australian painted snipe (*Rostratula australis*) – endangered, marine

(m) black-breasted button-quail (*Turnix melanogaster*) – vulnerable

(n) Mary River cod (*Maccullochella mariensis*) – endangered

(o) pink underwing moth (*Phyllodes imperialis smithersi*) – endangered

(p) large-eared pied bat (*Chalinolobus dwyeri*) – vulnerable

(q) northern quoll (*Dasyurus hallucatus*) – endangered

(r) spot-tailed quoll (SE mainland population) (*Dasyurus maculatus maculatus*) – endangered

(s) greater glider (*Petauroides Volans*) – vulnerable

(t) brush-tailed rock wallaby (*Petrogale penicillata*) – vulnerable

(u) koala (*Phascolarctos cinereus*) (combined population of Queensland, New South Wales and the Australian Capital Territory) – vulnerable

(v) long-nosed potoroo (SE mainland) (*Potorous tridactylus tridactylus*) – vulnerable

(w) New Holland mouse (*Pseudomys novaehollandiae*) – vulnerable

(x) grey-headed flying fox (*Pteropus poliocephalus*) – vulnerable

(y) five-clawed worm-skink, long-legged worm-skink (*Anomalopus mackayi*) – vulnerable

(z) Marlborough blue (*Cycas ophiolitica*) – endangered

(aa) hairy-joint grass *(Arthraxon hispidus)* – vulnerable

(bb) A shrub (*Bertya ernestiana*) – vulnerable

(cc) three-leaved bosistoa, yellow satinheart (*Bosistoa transversa*) – vulnerable

(dd) miniature moss-orchid, hoop pine orchid (*Bulbophyllum globuliforme*) – vulnerable

(ee) Boonah tuckeroo (*Cupaniopsis tomentella*) – vulnerable

(ff) bluegrass (*Dichanthium setosum*) – vulnerable

(gg) wandering pepper-cress (*Lepidium peregrinum*) – endangered

(hh) macadamia nut, Queensland nut tree, *(Macadamia integrifolia)* – vulnerable

(ii) rough-shelled bush nut, rough-leaved Queensland nut (*Macadamia tetraphylla*) – vulnerable

(jj) cooneana olive (*Notelaea ipsviciensis*) – critically endangered

(kk) Lloyd's olive (*Notelaea lloydii*) – vulnerable

(ll) lesser swamp-orchid (*Phaius australis*) – endangered

(mm) Mt Berryman phebalium *(Phebalium distans)* – critically endangered

(nn) shiny-leaved condoo, black plum, wild apple (*Planchonella eerwah*) – endangered

(oo) austral cornflower, native thistle (*Rhaponticum australe*) – vulnerable

(pp) quassia (*Samadera bidwillii*) – vulnerable

(qq) brush sophora (*Sophora fraseri)* – vulnerable

(rr) austral toadflax, toadflax (*Thesium australe*) – vulnerable

(ss) adorned delma, collared delma (*Delma torquata*) – vulnerable

(tt) Dunmall's snake (*Furina dunmalli)* – vulnerable

(uu) three-toed snake-tooth skink (*Saiphos reticulatus*) – vulnerable.

11.30. The EIS must address how the impacts to each of the listed species is not inconsistent with relevant recovery plans, threat abatement plans and conservation advices.

List of potential listed threatened communities

11.31. The EIS must address impacts on the following listed threatened ecological communities for the proposed action:

(a) Swamp Tea-tree (*Melaleuca irbyana*) Forest of South-east Queensland – critically endangered

(b) White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland (also known as Bon-Gum Grassy Woodland and Derived Grassland) – critically endangered

(c) Lowland Rainforest of Subtropical Australia – critically endangered

(d) brigalow (*Acacia harpophylla* dominant and co-dominant) – endangered.

11.32. The EIS must address how the impacts to each of the listed communities is not inconsistent with relevant recovery plans, threat abatement plans and conservation advices.

Offsets

11.33. The EIS must describe any significant residual impacts of the action for each relevant matter protected by the EPBC Act, after all proposed avoidance and mitigation measures are taken into account.

11.34. The EIS must propose offsets for all residual impacts to matters protected by the EPBC Act consistent with the Environment Protection and Biodiversity Conservation Act 1999 Environmental Offsets Policy.

Conclusion

11.35. The EIS must include an overall conclusion for the action describing the acceptability of the impact of undertaking the action in the manner proposed on the protected matters, in the context of:

(a) the requirements of the EPBC Act;

(b) the principles of ecologically sustainable development and the precautionary principle, and

(c) the proposed avoidance, mitigation measures, and if relevant, offsets measures proposed to address any residual impacts.

Water

Objective

Development is planned, designed, constructed and operated to protect environmental values of Queensland waters and supports the achievement of water quality objectives.

The construction and operation of the project should aim to meet the following objectives:

(a) equitable, sustainable and efficient use of water resources

(b) environmental flows, water quality, in-stream habitat diversity, and naturally occurring inputs from riparian zones support the long-term maintenance of the ecology of aquatic biotic communities

(c) the condition and natural functions of water bodies, lakes, springs and watercourses are maintained—including the stability of beds and banks of watercourses

(d) volumes and quality of water resources are maintained and current lawful users of water (such as water entitlement holders, stock and domestic users) and other beneficial uses of water (such as spring flows and groundwater-dependent ecosystems) are not adversely impacted by the development.

Existing environment

11.36. Identify the water-related environmental values and describe the existing surface water and groundwater regime within the study area and the adjoining waterways in terms of water levels, discharges and freshwater flows.

11.37. With reference to the EPP (Water) 2009, section 9 of the EP Act, and *SPP State Interest Guideline - Water Quality,* identify the environmental values of surface water within the project area and immediately downstream that may be affected by the project, including any human uses of the water and any cultural values.

11.38. At an appropriate scale, detail the chemical, physical and biological characteristics of surface waters and groundwater within the area that may be affected by the project. Include a description of the natural water quality variability within the study area associated with climatic and seasonal factors, and flows.

11.39. Describe any existing and/or constructed waterbodies adjacent to the preferred alignment.

11.40. Undertake a landholder bore survey to identify the location and source aquifer of licensed groundwater extraction in areas potentially impacted by the project (e.g. near tunnels and cuttings).

Water quality

Impact assessment

11.41. The assessment of impacts on water will be in accordance with the *DEHP Information guideline for an environmental impact statement – TOR Guideline – Water*, where relevant, located on the DEHP website (refer to Appendix 1).

11.42. Identify the quantity, quality and location of all potential discharges of water and wastewater by the project, whether as point sources (such as controlled discharges) or diffuse sources (such as irrigation to land of treated sewage effluent).

11.43. Assess the potential impacts of any discharges on the quality and quantity of receiving waters taking into consideration the assimilative capacity of the receiving environment and the practices and procedures that would be used to avoid or minimise impacts.

11.44. Where significant cuttings or tunnelling is proposed, identify the presence of any sulphide minerals in rocks with potential to create acidic, metalliferous and saline drainage. Should they be found present, describe the practicality of avoiding their disturbance. If avoidance is not practicable, characterise the potential of the minerals to generate contaminated drainage and describe abatement measures that will be applied to avoid adverse impacts to surface and groundwater quality.

11.45. Describe the potential impacts of in-stream works on hydrology and water quality.

11.46. Undertake a salinity risk assessment in accordance with Part B of *the Salinity Management Handbook*, Investigating Salinity (refer to Appendix 1). In particular, consider how the project will change the hydrology of the project area and provide results of the risk assessment.

Mitigation measures

11.47. Describe how the water quality objectives identified above would be achieved, monitored and audited, and how environmental impacts would be avoided or minimised and corrective actions would be managed.

11.48. Describe appropriate management and mitigation strategies and provide contingency plans for:

(a) potential accidental discharges of contaminants and sediments during construction and operation

(b) stormwater run-off from the project facilities and associated infrastructure during construction and operation, including the International Erosion Control Association, *Best Practice Erosion & Sediment Control – November 2008* (refer to Appendix 1), and the separation of clean stormwater run-off from disturbed and operational areas of the site

(c) flooding of relevant river systems, the effects of tropical cyclones and other extreme events

(d) management of acid sulfate soils and acid producing rock and associated leachate from excavations and disturbed areas.

11.49. Describe treatment processes for all waste water produced as a result of the project.

11.50. Propose suitable measures to avoid or mitigate the impacts of in-stream works on water quality and the stabilisation and rehabilitation of any such works.

11.51. Where a salinity risk is identified, detail strategies to manage salinity ensuring the development must be managed so that it does not contribute to the degradation of soil, water and ecological resources or damage infrastructure via expression of salinity. See Part C of the *Salinity management handbook second edition, Department of Environment and Resource Management 2011* (refer to Appendix 1).

Water resources

Impact assessment

11.52. Provide details of any proposed impoundment, extraction (i.e. volume and rate), discharge, use or loss of surface water or groundwater. Identify any approval or allocation that would be needed under the Water Act.

11.53. Detail any significant diversion or interception of overland flow. Include maps of suitable scale showing the location of diversions and other water-related infrastructure.

11.54. Develop hydrological models as necessary to describe the inputs, movements, exchanges and outputs of all significant quantities and resources of surface water and groundwater that may be affected by the project. The models should address the range of climatic conditions that may be experienced at the site, and adequately assess the potential impacts of the project on water resources. This should enable a description of the project's impacts at the local scale and in a regional context including proposed:

(a) changes in flow regimes from structures and water take

(b) alterations to riparian vegetation and bank and channel morphology

(c) direct and indirect impacts arising from the project.

(d) impacts to aquatic ecosystems, including groundwater-dependent ecosystems and environmental flows.

11.55. Provide information on the proposed water usage by the project, including:

(a) details of the estimated supply required to meet the demand for construction and full operation of the project, including timing of demands

(b) details of the quality and quantity of all water supplied to the site during the construction and operational phases based on minimum yield scenarios for water re-use, rainwater re-use and any bore water volumes

(c) a plan outlining actions to be taken in the event of failure of the main water supply

(d) sufficient hydrogeological information to support the assessment of any temporary water permit applications.

11.56. Describe proposed sources of water supply given the implication of any approvals required under the Water Act. Estimated rates of supply from each source (average and maximum rates) must be given and proposed water conservation and management measures must be described.

11.57. Determination of potable water demand must be made for the project, including the temporary demands during the construction period. Include details of any existing town water supply to meet such requirements. Detail should also be provided to describe any proposed on-site water storage and treatment for use by the site workforce.

11.58. Identify relevant Water Plans and Resources Operations Plans under the Water Act. Describe how the project will impact or alter these plans. The assessment should consider, in consultation with the Department of Natural Resources and Mines, any need for:

(a) a resource operations licence

(b) an operations manual

(c) a distribution operations licence

(d) a water licence

(e) a water management protocol.

11.59. Identify other water users that may be affected by the proposal and assess the project's potential impacts on other water users.

11.60. Identify and quantify likely activities involving the excavation or placement of fill that will be undertaken in any watercourse, lake or spring.

Mitigation measures

11.61. Provide designs for all infrastructure utilised in the treatment of on-site water including how any on-site water supplies are to be treated, contaminated water is to be disposed of and any decommissioning requirements and timing of temporary water supply/treatment infrastructure is to occur.

11.62. Describe measures to minimise impacts on surface water and ground water resources.

11.63. Provide a policy outline of compensation, mitigation and management measures where impacts are identified.

Flood management

Existing environment

11.64. A desktop assessment of the rail line and surrounding catchments must be undertaken and the potential for flooding qualitatively described. The desktop assessment must also identify any high-risk watercourse crossing or floodplain locations that warrant further detailed quantitative assessment.

Impact assessment

11.65. For the locations assessed under paragraph 11.64, a flood study must be included in the EIS that includes:

(a) quantification of flood impacts on properties and existing infrastructure surrounding and external to the preferred alignment from redirection or concentration of flows

(b) identification of likely increased flood levels, increased flow velocities or increased time of flood inundation as a result of the project

(c) details of all calculations along with descriptions of base data and any potential for loss of flood plain storage.

11.66. The flood study should address any requirements of the Brisbane River Catchment Flood Study 2016, local or regional planning schemes and current accepted practice and statutory requirements in relation to flood plain management. The method of modelling used in the study should be described and justified.

11.67. Describe flood risk for a range of annual exceedance probabilities (including but not limited to the modelled Brisbane River Catchment Flood Study 2016 probable maximum flood) for the site, and assess how the project may change flooding characteristics particularly upstream afflux from the proposal and the impact of changed water regimes. Include a discussion of historical events.

11.68. The study should consider all infrastructure associated with the project including levees, roads and linear infrastructure.

11.69. The EIS should describe the consultation that has taken place with landholders along the alignment regarding modelled potential impacts of the project on flooding. It should also include a discussion of how the results of consultation have been considered by the proponent in the EIS process.

11.70. Reference must be made to relevant studies published by local governments.

Mitigation measures

11.71. Identify all proposed measures to avoid or minimise risks to life, property, infrastructure, community (including damage to other properties) and the environment as a result of project impacts during flood events—particularly flood risks on individual properties and businesses, including in and around Calvert, Lanefield, Lower Mount Walker, Ebenezer, Mutdapilly, Purga and Washpool.

Land

Objectives

Development should be designed and operated to:

(a) improve environmental outcomes

(b) contribute to community wellbeing

(c) contribute to social, economic and environmental sustainability

(d) mitigate impacts to the natural landscape and visual amenity.

Land use and tenure

Existing environment

11.72. Detail the existing land use values for all areas associated with the preferred alignment.

11.73. Discuss the compatibility of the project with land that includes the proposed alignment and surrounding land which will be impacted by the project. The discussion should include:

(a) existing and proposed land uses in and around the preferred alignment, referring to regional plans and the local government planning schemes

(b) State interests identified in the SPP (e.g. KRA No. 82 Purga)

(c) any land characteristics that influenced the choice of the preferred alignment

(d) a description and illustration of any tenures overlying and adjacent to the preferred alignment, and any to be applied for as part of this project and the legal implications and requirements of this tenure

(e) an analysis of the agricultural land uses based on the Agricultural Land Audit in the project area

(f) any petroleum and gas pipeline licence tenures and resource tenure holders within the vicinity of the proposed corridor.

Impact assessment

11.74. Describe the potential for impact on agricultural land uses during construction and operation of the project. The assessment should include consideration of temporary and permanent impacts on agricultural production.

11.75. Describe the potential for impact on existing holders of resource tenures, including consideration to safety and resource sterilisation where appropriate.

11.76. Identify tenure required for the project to proceed, including proposed easements, leases or licences including the timing of such acquisitions or tenure changes.

11.77. Provide evidence of consultation with the relevant owners/licensees of gas/petroleum pipelines in the vicinity of the rail corridors. Provide detail of agreed risk management strategies for project construction and operation with regard to the gas/petroleum pipelines. Demonstrate that the construction and operation of the project will not inhibit the safe and efficient operation of the pipelines.

11.78. Describe impacts on existing uses of State land and uses either allowed by current tenures or publicly proposed by government at the time of preparation of the EIS.

11.79. Discuss the proposal in the context of the applicable Regional Plan and local planning schemes.

11.80. Describe the potential impact of the construction and operation of the project on existing land uses and land uses permitted under the relevant planning scheme along the preferred alignment and adjacent areas including impacts on Council assets and KRAs. Discussion in relation to KRAs (particularly KRA No. 82 Purga) should describe the:

(a) geological properties that may influence ground stability (including seismic activity), and how this might compromise rail infrastructure and operation over short and long-term time horizons

(b) location, volume, tonnage and quality of natural resources present which will be potentially impacted by the project.

Mitigation measures

11.81. Identify the measures that would be used to avoid or mitigate any impact on land values, including the management of existing infrastructure remaining on reconfigured land parcels.

11.82. Where coexistence with agriculture is not possible, provide mitigation and management measures to address associated impacts.

11.83. Provide an outline of the land acquisition and compensation processes for properties directly impacted by the project.

11.84. Provide details of measures to be undertaken to avoid, minimise and mitigate identified impacts on KRA No. 82.

Native Title

11.85. Identify existing and potential Native Title rights and interests possibly impacted by the proposed project and describe how those impacts will be managed.

Landscape and visual amenity

Existing environment

11.86. Describe and illustrate the existing landscape character and environment, including key natural landscape features, major views, view sheds and outlooks that contribute to the amenity of the area.

Impact assessment

11.87. Describe and illustrate the visual impact of the construction and operation of the project. Include major views, view sheds, outlooks, and features contributing to the amenity of the area. Such views should be representative of public and private viewpoints, including places of residence, work, and recreation.

11.88. Address the findings, requirements and recommendations of *South East Queensland Regional Plan 2005-2026 Implementation Guideline No 8 – Identifying and Protecting Scenic Amenity Values (2007)* (refer to Appendix 1).

Mitigation measures

11.89. Describe any proposed measures to avoid, minimise or mitigate potential impacts on landscape character and visual amenity.

Topography, geology and soils

11.90. The assessment of impacts on topography, geology and soils will be in accordance with the DEHP Information guideline for an environmental impact statement – Land and the CSIRO guidelines – Guidelines for surveying soil and land resources and Australian soil and land survey field handbook (refer to Appendix 1).

11.91. Discuss the project's impacts on Important Agricultural Areas as per the SPP – *state interest guideline – Agriculture* with reference to Agricultural Land Use Categories under the Queensland Agricultural Land Audit methodology (refer to Appendix 1).

11.92. Identify and investigate areas of salinity, acid sulfate soils, sodic, dispersive and cracking clay soils and potential and actual areas of acid sulfate soils. Where potential areas are identified, further investigations (including field surveys) should be undertaken in accordance with accepted industry guidelines and the requirements of the relevant SPP – *state interest guideline – Water quality* are followed.

11.93. Provide details, including maps, of the location of project works/infrastructure with respect to soil conservation works (contour banks, waterway discharge points, etc.).

11.94. Identify activities or operations likely to impact soil conservation property plans approved under the *Soil Conservation Act 1986*.

11.95. Measures to avoid or mitigate potential impacts of the project on soil values must be described.

Flora and fauna

Objective

Matters of environmental significance are identified and appropriately safeguarded to support healthy and resilient ecosystems and ensure the sustainable, long-term conservation of biodiversity and the social, economic, cultural and environmental benefits it provides.

Existing environment

11.96. Identify and describe matters of State environmental significance (MSES), State and regionally significant biodiversity and natural environmental values of the terrestrial and aquatic ecology, including their seasonal variations, likely to be impacted by the project which have not been addressed in the section on MNES.

Impact assessment

11.97. Describe the likely impacts on the biodiversity and natural environmental values of affected areas arising from the construction and operation of the project. The assessment should include, but not be limited to, the following key elements:

(a) MSES, matters of local environmental significance, and designated State and regional biodiversity values and conservation corridors of conservation significance. Reference should be made to the Biodiversity Planning Assessment and BioCondition assessment tools where appropriate (refer to Appendix 1).

(b) terrestrial and aquatic ecosystems (including groundwater-dependent ecosystems) and their interaction and areas surrounding watercourses and wetlands

(c) biological diversity including listed flora and fauna species and regional ecosystems, connectivity and essential habitat

(d) the existing integrity of ecological processes, including habitats of threatened, near-threatened or special least-concern species

(e) the integrity of landscapes and places, including wilderness and similar natural places

(f) actions of the project that require an authority under the NC Act and Water Act (for example, riverine protection permits) and/or could be assessable development for the purposes of the VMA, Fisheries Act and PA

(g) any exposure to contaminants or the bio-accumulation of contaminants

(h) impacts on native fauna due to proximity to the site and site impacts (e.g. lighting, noise, waste and fencing)

(i) impacts to movement of native fauna due to barrier effect of linear infrastructure

(j) impacts on vegetation category areas identified on the regulated vegetation management maps under Queensland's vegetation management framework.

Mitigation measures

11.98. Describe any proposed measures to avoid, minimise or mitigate potential impacts on natural values, and enhance these values. Assess how the nominated quantitative indicators and standards may be achieved for nature conservation management. In particular, address measures to protect or preserve any threatened or near-threatened species.

11.99. Assess the need for buffer zones and the retention, rehabilitation, planting or construction of movement corridors across the railway and propose measures that would avoid the need for waterway barriers, or propose measures to mitigate the impacts of their construction and operation.

11.100. Describe how the achievement of the objectives would be monitored and audited, and how corrective actions would be managed.

11.101. Where a significant residual impact will occur on a prescribed environmental matter as outlined in the Environmental Offsets Regulation 2014, the offset proposal(s) must be consistent with the requirements of Queensland's EO Act and the latest version of the *Queensland Environmental Offsets Policy* (refer to Appendix 1).

11.102. Assess the need and suitability and provide objective commitments to the provision of fauna passage between habitat fragmented by the rail corridor, of suitable design and location for affected species and their habitat.

11.103. Demonstrate that actions of the project avoid and minimise impacts of clearing vegetation regulated through the VMA/PA and how any clearing maintains connectivity of the remaining mapped category B area in the landscape. Provide details on the exemptions/assessment pathway for any clearing of vegetation regulated through the VMA/PA.

Biosecurity

Objectives

The construction and operation of the project should aim to ensure:

(a) the spread of weeds and pest animals is minimised

(b) existing weeds and pests are controlled.

Existing environment

11.104. Provide information on the current distribution of animal pests and weeds on the preferred alignment.

11.105. Surveys of animal pests and weeds should be undertaken in those areas identified during the desktop assessment as containing listed flora, fauna or ecological communities of national or state environmental significance (MNES or MSES defined by the EPBC and NC Acts respectively).

Impact assessment

11.106. Describe the impact the project's construction and operation may have on the spread of pest animals and weed species along the preferred alignment and into adjoining properties.

Mitigation measures

11.107. Propose detailed measures to control and limit the spread of pests and weeds on the preferred alignment and adjacent areas and any relevant local government area Biosecurity Plans. This includes restricted matters listed in the Biosecurity Act and Biosecurity Regulation 2016 and designated pests under the *Public Health Act 2005*.

11.108. All proposed measures must be in accordance with any relevant biosecurity surveillance or prevention program authorised under the Biosecurity Act and any requirements of the VMA/PA. Mitigation measures may be developed in consultation with relevant agencies and local government (e.g. baiting programs).

Transport

Objectives

The construction and operation of the project should aim to:

(a) maintain the safety and efficiency of all affected transport modes for the project workforce and other transport system users

(b) avoid or mitigate impacts on the condition of transport infrastructure

(c) ensure any required works are compatible with existing infrastructure and future transport corridors.

Existing environment

11.109. Describe and map the existing transport infrastructure and corridors. Provide data on existing road, active transport and rail traffic in the project area.

11.110. Describe and map where the project's preferred alignment differs from the State's strategic rail corridors, including the Southern Freight Rail Corridor and the reasons for any such deviation.

11.111. Describe how the project complies with the Queensland Level Crossing Safety Strategy 2012–2021 for new road/rail interfaces and the impacts on existing road/rail interfaces.

Impact assessment

11.112. Assess the impacts of the project on individual road/rail crossings and any cumulative impacts on the wider transport network in the context of the Queensland level crossing safety strategy.

11.113. The EIS should include a clear summary of the total transport task for the project, including workforce, haulage routes, inputs and outputs during the construction and operational phases.

11.114. Present the transport assessment in separate sections for each project-affected mode (road, active transport and rail) as appropriate for each phase of the project.

11.115. Provide sufficient information to allow an independent assessment of how existing and proposed transport infrastructure will be affected by project transport at the local and regional level (for example, local roads and state-controlled roads). Discussion should also refer to emergency service access.

11.116. Include details of the adopted assessment methodology for impacts on roads within the road impact assessment report in accordance with the Department of Transport and Main Roads' Guide to Traffic Impact Assessment (refer to Appendix 1).

Mitigation measures

11.117. Discuss and recommend how identified impacts will be mitigated. Mitigation strategies are to be prepared in close consultation with relevant transport authorities (including local government).

Noise and vibration

Objective

Development is planned, designed, constructed and operated to protect the environmental values of the acoustic environment.

Existing environment

11.118. Describe the existing noise and vibration environment that may be affected by the project in the context of the environmental values.

11.119. Describe and illustrate on maps at a suitable scale, the location of all sensitive noise and vibration receptors adjacent to all project components and estimate typical background noise and vibration levels based on surveys at representative sites.

11.120. If the proposed project could adversely impact on the noise and vibration environment, undertake baseline monitoring at a selection of sensitive receptors potentially affected by the project. Describe the results of any baseline monitoring.

Impact assessment

11.121. Describe the characteristics of the noise and vibration sources that would be emitted when carrying out the activity (point source and general emissions). Describe noise and vibration emissions (including fugitive sources) that may occur during construction, commissioning and operation.

11.122. Predict and map the impacts of the noise and vibration emissions from the construction and operation of the project on the environmental values of the receiving environment, including sensitive receptors. The assessment of impacts on noise and vibration consider, as applicable the following:

(a) EPP (Noise) 2008, using recognised quality assured methods

(b) *Environmentally Relevant Activities - DEHP Application Requirements for ERAs with noise impacts* (Guideline ESR/2015/1838)

(c) Construction – The Department of Transport and Main Roads *Transport Noise Management Code of Practice: Volume 2 - Construction Noise and Vibration* dated March 2016 and gazetted on 29 July 2016

(d) Operational Noise – The Department of Transport and Main Roads *Policy for Development on Land Affected by Environmental Emissions from Transport and Transport Infrastructure Version 2, 10 May 2013* (Rail noise external criteria contained in Table 3 of the document)

(e) Operational vibration – British Standard BS 6472-1:2008 *Guide to evaluation of human exposure to vibration in buildings – Vibration sources other than blasting*. British Standards Institution, London

(f) The Department of Transport and Main Roads *Policy for Development on Land Affected by Environmental Emissions from Transport and Transport Infrastructure Version 2, 10 May 2013* (criteria contained in Table 6 of the document).

11.123. Discuss separately the key project components likely to present an impact on noise and vibration for the construction and operation phases of the project.

11.124. Taking into account the practices and procedures that would be used to avoid or minimise impacts, the impact prediction must address the:

(a) activity's consistency with the objectives of documentation referenced in 11.122

(b) cumulative impact of the noise and vibration with other known emissions of noise associated with existing major projects and/or developments and those which are progressing through planning and approval processes publicly available

(c) potential impacts of any low-frequency (<200 Hz) noise emissions.

Mitigation measures

11.125. Describe how the proposed project and, in particular, the key project components described above, would be managed to be consistent with best practice environmental management for the activity. Where a government plan is relevant to the activity, or the site where the activity is proposed, describe the activity's consistency with that plan.

11.126. Describe any expected exceedances of noise and vibration goals or criteria following the provision or application of mitigation measures and how any residual impacts would be addressed.

11.127. Describe how the achievement of the objectives would be monitored and audited, and how corrective actions would be managed.

Air

Objective

Development is planned, designed, constructed and operated to protect the environmental values of air.

Existing environment

11.128. Describe the existing air quality that may be affected by the project in the context of environmental values.

11.129. Discuss the existing local and regional air shed environment.

11.130. Provide baseline data on local meteorology and ambient levels of pollutants for modelling of air quality. Parameters should include air temperature, wind speed and directions, atmospheric stability, mixing depth and other parameters necessary for input to the model.

11.131. The assessment of environmental values must describe and map at a suitable scale the location of all sensitive air receptors adjacent to all project components. An estimate of typical background air quality levels should be based on surveys at representative sites where data from existing DEHP monitoring stations cannot be reliably extrapolated.

Impact assessment

11.132. Describe the characteristics of any contaminants or materials that may be released as a result of the construction or operations of the project, including point source and fugitive emissions. Emissions (point source and fugitive) during construction, commissioning and operations are to be listed.

11.133. The relevant air quality goals or objectives that will be adopted for the assessment should be clearly outlined as a basis of the assessment of impacts on air.

11.134. The assessment of impacts on air will be in accordance with the EP Act, EP Regulation and EPP (Air) 2008 and reference to appropriate to Australian Standards.

11.135. Predict the impacts of the releases from the activity on environmental values of the receiving environment using recognised quality assured methods. The description of impacts should take into consideration the assimilative capacity of the receiving environment and the practices and procedures that would be used to avoid or minimise impacts. The impact prediction must:

(a) address residual impacts on the environmental values (including appropriate indicators and air quality objectives) of the air receiving environment, with reference to the air environment[7] at sensitive receptors. This should include all relevant values potentially impacted by the activity, under the EP Act, EP Regulation and EPP (Air)

(b) address the cumulative impact of the release with other known releases of contaminants, materials or wastes associated with existing major projects and/or developments and those which are progressing through planning and approval processes and public information is available

(c) include modelling of dust deposition rates and air pollutant concentrations on surfaces that lead to potable water tanks in the vicinity of the project. This modelling is to be in accordance with the *Australian Drinking Water Guidelines* (Australian Government 2011, updated October 2017).

(d) predict the human health risk, including impacts from possible air pollutant concentrations on surfaces that may lead to potable water tanks, and amenity impacts associated with emissions from the project for all contaminants covered by the National Environmental Protection (Ambient Air Quality) Measure or the EPP (Air)

Mitigation measures

11.136. Describe the proposed mitigation measures to manage impacts to air quality, including potential impacts from coal trains and the predicted level of effectiveness.

[7] In accordance with the EPP (Air) 2008

11.137. Describe how the proposed activity will be consistent with best practice environmental management. Where a government plan is relevant to the activity or site where the activity is proposed, describe the activity's consistency with that plan.

11.138. Describe any expected exceedances of air quality goals or criteria following the provision and/or application of mitigation measures, and how any residual impacts would be addressed.

11.139. Describe how the achievement of the objectives would be monitored, audited and reported and how corrective actions would be managed.

Social

Objectives

The construction and operation of the project should aim to:

(a) avoid or mitigate/manage adverse social impacts arising from the project

(b) capitalise on opportunities potentially available for local industries and communities.

Information requirements

11.140. Conduct a social impact assessment (SIA) in accordance with the Coordinator-General's *Social impact assessment guideline* (July 2013) and the Coordinator-General's *Social impact assessment guideline (draft)* (October 2016) or the guideline in place at the time of delivery of the SIA.

11.141. The SIA should be developed in consultation with the Coordinated Project Delivery Division in the Office of the Coordinator-General, Department of State Development, and describe the potential social impacts (positive and negative) on affected communities. The proposed mitigation measures are to be discussed. Matters to be considered in the SIA are detailed in the following sections.

11.142. The SIA is to include:

(a) a profile of key stakeholders

(b) a social baseline study of potentially impacted communities within the SIA study area

(c) an overview of state government legislation and policies and priorities which complement the mitigation measures for the project's social impacts

(d) an explanation of sources used to gather information and analysis methods used. Discuss rationale for both primary and secondary data

(e) a description of how the potentially impacted communities and affected stakeholders were engaged and consulted with during the development of the SIA

(f) identification of potential social impacts and their likely significance, including duration

(g) the proponent's proposed enhancement and mitigation/management measures in relation to project impacts

(h) details of the proponent's proposed monitoring and reporting framework.

Existing environment

Social impact assessment study area

11.143. Define the project's SIA study area (including the local, district, regional and state level as relevant), taking into account the:

(a) potential for social impacts to occur

(b) location of other relevant projects (existing major projects and/or developments and those which are progressing through planning and approval processes and public information is available)

(c) location and types of physical and social infrastructure, settlements and land use patterns

(d) social values that might be affected by the project including integrity of social conditions, liveability, social harmony and wellbeing and sense of community

(e) Indigenous social and cultural characteristics, such as native title rights and interests, and cultural heritage.

Social baseline study

11.144. Undertake a targeted baseline study of the people residing within the project's SIA study area. This will provide a benchmark against which to identify the project's social issues, potential negative and positive social impacts, and the mitigation measures and management plans to address these impacts.

11.145. The social baseline study should be based on qualitative, quantitative and participatory methods. It should be supplemented by community engagement processes and primary data collection, and should reference relevant data contained in local and state government publications, reports, plans, guidelines and documentation, including regional and community plans.

Community engagement

11.146. A consultative and inclusive community and stakeholder engagement process should inform the baseline study, assessment of potential social impacts and development of appropriate mitigation measures and management plans. The engagement should commence at an early stage of the EIS process. It should include consultation with a broad range of stakeholder groups including affected landholders, local residents, community groups, traditional owners, state and local government agencies, and non-government organisations, local businesses and traditionally-underrepresented stakeholders (for example vulnerable groups, women, people with a disability, Indigenous people and persons from diverse ethnic or linguistic backgrounds).

11.147. The community and stakeholder engagement process should be adequately described and documented in the EIS. This should include details such as stakeholders consulted and how and when they were consulted, principles and processes adopted, overview of the consultation program and key events, stakeholder feedback and issues raised (including the means by which these have been or will be addressed), and a statement of agreement/s reached, or to be negotiated, for impact mitigation and management.

Potential impacts and mitigation

Impact assessment

11.148. Assess and describe the type, level and significance of the project's social impacts (both negative and positive), based on the outcomes of the community engagement, social baseline study and impact analysis processes. This should include sufficient data to enable affected local and state authorities to make informed decisions about the project's effects. The potential social impacts will be identified by considering the potential changes to key aspects included in the social baseline study as a result of the project.

11.149. Impact assessment should include an assessment of the potential scope and significance of impacts at the local and regional level, considering factors such as:

(a) population and demographic changes
(b) workforce
(c) lifestyles and amenity
(d) community values
(e) housing
(f) local and regional planning outcomes
(g) social infrastructure
(h) the health and social/cultural wellbeing of families and communities.

11.150. The impact assessment should also evaluate and discuss the potential cumulative social impacts resulting from the proposed project in combination with other existing major projects and/or developments and those which are progressing through planning and approval processes (where public information is available) within the SIA study area. Key issues assessed should include:

(a) population
(b) workforce (construction and operation)
(c) workforce accommodation
(d) local and regional housing markets
(e) use of and access to community infrastructure, services and facilities (including social and health services and facilities).

11.151. The impact assessment should include:

(a) the impacts identified by the SIA process
(b) impacted stakeholders
(c) the timing or timeframes of impacts and the mitigation and management measures
(d) description of the mitigation and management measures
(e) defined outcomes, and the performance indicators and targets to achieve the outcomes
(f) monitoring and reporting framework
(g) residual impacts (after mitigation and management measures) and how these will be addressed.

Management plans

11.152. Management plans for the following are to be provided as part of the SIA:

(a) community and stakeholder engagement

(b) workforce management

(c) housing and accommodation

(d) local business and industry content

(e) health and community wellbeing.

Economic

Objectives

The construction and operation of the project should aim to:

(a) avoid or mitigate adverse economic impacts arising from the project

(b) capitalise on opportunities potentially available for capable local industries and communities

(c) create a net economic benefit to the region and State.

Information requirements

11.153. Identify the economic impacts of the project on the local and regional area and the State. Estimate the costs and benefits and economic impacts of the proposal using both regional impact analysis and cost–benefit analysis. The analysis should be consistent with the Coordinator-General's *Economic impact assessment guideline* (April 2017).

Hazards, health and safety

Objectives

(a) The risk of, and the adverse impacts from, natural hazards are identified, avoided, minimised or mitigated to protect people and property and enhance the community's resilience to natural hazards.

(b) Developments are to be appropriately located, designed and constructed to minimise health and safety risks to communities and individuals and adverse effects on the environment.

Information requirements

General

11.154. Describe the potential risks to people and property that may be associated with the project in the form of a preliminary risk assessment for all components of the project and in accordance with relevant standards. The assessment should include:

(a) specific consideration of:

(i) respirable silica and other airborne contaminants (e.g. naturally occurring asbestos)

(ii) sudden subsidence or movement of soil or rock

(iii) flash flooding

(iv) fatigue and heat management

(v) concurrent or simultaneous operations with existing railway infrastructure

(b) other potential hazards (including abandoned mines), accidents (including derailments), spillages, fire and abnormal events that may occur during all stages of the project, including estimated probabilities of occurrence

(c) identifying all dangerous and hazardous substances (including likely volumes) to be used, stored, processed, transported or produced and the rate of usage

(d) potential wildlife hazards, natural events (e.g. cyclone, flooding, bushfire and landslide)

(e) how the project may potentially affect hazards away from the preferred alignment (e.g. changing flooding characteristics).

11.155. Describe those measures required to ensure that the proposed project avoids the release of hazardous materials to the environment including as a result of a natural hazard event.

11.156. Provide details on the safeguards that would reduce the likelihood and severity of hazards, consequences and risks to persons, within and adjacent to the project area(s). Identify the residual risk following application of mitigation measures including any actual or potential impacts to existing fire trails and evacuation routes. Present an assessment of the overall acceptability of the impacts of the project in light of the residual uncertainties and risk profile.

11.157. Provide an outline of the proposed integrated emergency management planning procedures (including evacuation plans, if required) for the range of situations identified in the risk assessment developed in this section.

11.158. Outline any consultation undertaken with the relevant emergency management authorities, including the Local Disaster Management Group.

11.159. Identify the need for appropriate explosive licences and requirements to notify of proposed blasting prior to explosives use under the *Explosives Act 1999* and relevant codes and standards including the Australian Standard AS2187 – Explosives – Storage, transport and use. Any risk associated with explosives use, manufacture or storage is within an acceptable level in accordance with the *Explosives Act 1999* and codes and standards including Australian Standard AS2187 – Explosives – storage, transport and use.

11.160. Detail the risk of the use of explosives in connection to the rail alignment, associated infrastructure and any proposed mitigation measures to limit this risk.

Land contamination

11.161. Detail any known or potential sources of contaminated land within or adjoining the project area, including the location of any potential contamination identified by landholders. Provide results of searches of the Environmental Management Register and/or the Contaminated Land Register under the EP Act for the preferred rail alignment and disturbance areas.

11.162. Provide a description of the nature and extent of contamination at identified site(s).

11.163. Describe the proposed management of any contaminated land either previously identified or encountered during construction activities and the potential for contamination from construction, commissioning, operation and decommissioning.

11.164. Describe strategies and methods to be used to prevent, manage or remediate any land contamination resulting from the project, including but not limited to the management of any acid generation or management of chemicals and fuels to prevent spills or leaks.

11.165. Describe how the presence of any known potential unexploded ordnance will be identified on maps of an appropriate size and scale and assessed within or adjoining the project area. Describe how any known or potential unexploded ordnance will be managed.

Climate

11.166. Describe the climate patterns with particular regard to discharges to water and air and the propagation of noise related to the project.

11.167. Climate information should be presented in a statistical form including long-term averages and extreme values, as necessary.

11.168. Describe the climatic conditions that may affect management of the project. This includes a description of the vulnerability of the project area to seasonal conditions, extremes of climate (for example, cyclones and prolonged rain events) and natural or induced hazards (including bushfire).

Waste management

Objective

Any waste transported, generated, disturbed or received as part of carrying out the activity is managed in a way that protects all environmental values.

Impact assessment

11.169. For wastes, besides wastewater (which is addressed in the 'Water' section of this TOR), describe and quantify all expected significant waste streams (including spoil) from the proposed project activities during the construction and operational phases of the project. Reference should be made to the DEHP's Application requirements for activities with waste impacts (refer to Appendix1).

11.170. Describe potential spoil disposal sites and their ability to service the project.

11.171. Define and describe the objectives and practical measures for protecting or enhancing environmental values from impacts by wastes. Take into account best practice waste management strategies as outlined in the National Waste Policy 2009 and the *Waste Reduction and Recycling Act 2011* and the EP Regulation.

11.172. Describe the quantity, and physical and chemical characteristics of waste rock, any attributes that may affect its dispersal in the environment, and its associated risk of causing environmental harm.

Mitigation measures

11.173. Assess the proposed management measures against the preferred waste management hierarchy, namely: avoid waste generation, cleaner production, reduce, recycle, re-use, reprocess and reclaim, waste to energy, treatment and disposal. This includes the generation and storage of waste.

11.174. Describe how nominated quantitative standards and indicators may be achieved for waste management, and how the achievement of the objectives would be monitored, audited and managed.

11.175. Detail waste management planning for the proposed project especially how these plans would be applied to prevent or minimise environmental impacts due to waste at each stage of the project.

11.176. Provide details on natural resource-use efficiency (such as energy and water), integrated processing design, and any co-generation of power and by-product reuse as shown in a material/energy flow analysis.

Cultural heritage

Objective

The construction and operation of the project should aim to ensure that the nature and scale of the project does not compromise the cultural heritage significance of a heritage place or heritage area.

Information requirements

11.177. Unless section 86 of the *Aboriginal Cultural Heritage Act 2003* (ACH Act) applies, the proponent must develop a Cultural Heritage Management Plan (CHMP) in accordance with the requirements of Part 7 of the ACH Act. The EIS should provide details of the CHMP and any associated agreements that has been developed or reached or steps taken up to that point to develop or reach such a plan or agreement.

11.178. For non-Indigenous historical heritage, undertake a study of, and describe, the known and potential historical cultural and landscape heritage values of the area potentially affected by the project. Any such study should be conducted by an appropriately qualified cultural heritage practitioner. Provide strategies to mitigate and manage any negative impacts on non-Indigenous cultural heritage values and enhance any positive impacts.

12. Appendices to the EIS

12.1. Appendices should provide the complete technical evidence used to develop assertions and findings in the main text of the EIS.

12.2. No significant issue or matter should be mentioned for the first time in an appendix—it must be addressed in the main text of the EIS.

12.3. Include a table listing the section of the EIS where each requirement of the TOR is addressed.

12.4. Include a glossary of terms and a list of acronyms and abbreviations.

Acronyms and abbreviations

The following acronyms and abbreviations have been used in this document.

Acronym/abbreviation	Definition
ABN	Australian Business Number
ACH Act	*Aboriginal Cultural Heritage Act 2003*
AHD	Australian Height Datum
Biosecurity Act	*Biosecurity Act 2014*
CHMP	Cultural Heritage Management Plan
Cwlth	Commonwealth
DEHP	Department of Environment and Heritage Protection
EIS	environmental impact statement
EO Act	*Environmental Offsets Act 2014*
EP Act	*Environmental Protection Act 1994*
EP Regulation	Environmental Protection Regulation 2008
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999* (Cwlth)
EPBC Regulations	Environment Protection and Biodiversity Conservation Regulations 2000 (Cwlth)
EPP	Environmental Protection Policy (under the EP Act)
ERA	Environmentally relevant activity
Fisheries Act	*Fisheries Act 1994*
KRA	Key Resource Area
GDA94	Geocentric Datum of Australia 1994
MNES	matters of national environmental significance (under the EPBC Act)
MSES	matters of state environmental significance
NC Act	*Nature Conservation Act 1992*
PA	*Planning Act 2016*
SIA	Social impact assessment
SDAP	State Development Assessment Provisions prescribed in the Planning Regulation 2017
SDPWO Act	*State Development and Public Works Organisation Act 1971*
SPP	State Planning Policy
TOR	terms of reference
VMA	*Vegetation Management Act 1999*
Water Act	*Water Act 2000*

Appendix 1. Policies and guidelines

General

Queensland Government, *Preparing an environmental impact statement: Guideline for proponents*, The Coordinator-General, Department of State Development, viewed 29 November 2017, **www.statedevelopment.qld.gov.au/fact-sheets-and-guidelines/coordinated-projects.html**

Queensland Government, *Information guide for an environmental impact statement*, Department of Environment and Heritage Protection, viewed 29 November 2017, **https://www.ehp.qld.gov.au/management/impact-assessment/eis-processes/eis-tor-support-guidelines.html**

Queensland Government, *DAFF Environmental Impact Assessment Companion Guide*, August 2014, Department of Agriculture, Fisheries and Forestry, viewed 29 November 2017, **https://publications.qld.gov.au/dataset/daff-environmental-impact-assessment-companion-guide/resource/7b1825c4-5e42-4cf8-aa2d-7fa55c2f5e4c**

Queensland Government, *State Development Assessment Provisions*, Department of Infrastructure Local Government and Planning, viewed 29 November 2017, **http://www.dilgp.qld.gov.au/planning/development-assessment/state-development-assessment-provisions.html**

Water

Australian and New Zealand Environment and Conservation Council and Agriculture and Resource Management Council of Australia and New Zealand, *The Australian and New Zealand Guidelines for Fresh and Marine Water Quality*, Australian Water Association (Artarmon) and NZ Water and Wastes Association (Auckland), viewed 29 November 2017, **http://www.agriculture.gov.au/water/quality/guidelines**

Queensland Government, *Application requirements for activities with impacts to water guideline*, Department of Environment and Heritage Protection, Brisbane, 2013, viewed 29 November 2017, **http://www.ehp.qld.gov.au/assets/documents/regulation/era-gl-water-impacts.pdf**

Queensland Government, *EIS information guideline – Water,* Department of Environment and Heritage Protection 2016, viewed 29 November 2017, **https://www.ehp.qld.gov.au/management/impact-assessment/eis-processes/eis-tor-support-guidelines.html**

Queensland Government, *Queensland Water Quality Guidelines 2009,* Department of Environment and Heritage Protection, Brisbane, 2009, viewed 29 November 2017, **http://www.ehp.qld.gov.au/water/guidelines**

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Queensland Government, *Salinity management handbook second edition,* Department of Environment and Resource Management 2011, viewed 29 November 2017, **https://publications.qld.gov.au/dataset/salinity-management-handbook**

Queensland Government, Department of Infrastructure, Local Government and Planning, State Planning Policy – *state interest guideline – Water Quality*, April 2016, viewed 29 November 2017, **http://www.dilgp.qld.gov.au/resources/guideline/spp/spp-guideline-water-quality.pdf**

Land

CSIRO – Victoria - McKenzie, N.J., Grundy, M.J. & Ringrose-Voase, A.J., eds., (2008), '*Guidelines for surveying soil and land resources'*, CSIRO, Collingwood, Vic.

CSIRO – Victoria - NCST, 2009, '*Australian soil and land survey field handbook' National Committee on Soil and Terrain,* CSIRO, Collingwood, Vic.

International Erosion Control Association, *Best Practice Erosion & Sediment Control – November 2008,* viewed 29 November 2017, **https://www.austieca.com.au/publications/books-1-3**

National Environment Protection Council, *National Environmental Protection (Assessment of Site Contamination) Amendment Measure 2013 (No. 1) (*NEPM), viewed 29 November 2017, **http://www.nepc.gov.au/nepms/assessment-site-contamination**

Queensland Government, *Application requirements for activities with impacts to land, 2017,* viewed 29 November 2017, **https://www.ehp.qld.gov.au/assets/documents/regulation/era-gl-land-impacts.pdf**

Queensland Government, *South East Queensland Regional Plan 2005-2026 Implementation Guideline No 8 – Identifying and Protecting Scenic Amenity Values 2007,* Department of Infrastructure Local Government and Planning, 2007, viewed 29 November 2017, **http://www.statedevelopment.qld.gov.au/resources/guideline/scenic-amenity-guideline.pdf**

Queensland Government, *Queensland Agricultural Land Audit,* Department of Agriculture and Fisheries, 2016, viewed 29 November 2017, **https://www.daf.qld.gov.au/environment/ag-land-audit**

Queensland Government, *State Planning Policy*, Department of Infrastructure, Local Government and Planning, Brisbane, 2016, viewed 29 November 2017, **http://dilgp.qld.gov.au/resources/policy/state-planning/spp-april-2016.pdf**

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Flora and Fauna

Commonwealth Government, *Environment Protection and Biodiversity Conservation Act 1999* Environmental Offsets Policy, October 2012, viewed 29 November 2017, **http://www.environment.gov.au/epbc/publications/epbc-act-environmental-offsets-policy**

Queensland Government, *Queensland Environmental Offsets Policy - version 1.4,* Department of Environment and Heritage Protection, July 2017, viewed 29 November 2017, **http://www.ehp.qld.gov.au/assets/documents/pollution/management/offsets/offsets-policyv1-4.pdf**

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Queensland Government, *Biodiversity planning assessments*, Department of Environment and Heritage Protection, 2016, viewed 29 November 2017, **https://www.qld.gov.au/environment/plants-animals/biodiversity/planning**

Transport

Queensland Government, *EIS information guideline – Transport,* Department of Environment and Heritage Protection, Brisbane, viewed 29 November 2017, **https://www.ehp.qld.gov.au/management/impact-assessment/eis-processes/documents/generic-tor-supporting-guidelines/tor-guideline-transport.docx**

Queensland Government, *Guide to Traffic Impact Assessment 2017,* Department of Transport and Main Roads, Brisbane, viewed 29 November 2017,

https://www.tmr.qld.gov.au/business-industry/Technical-standards-publications/Guide-to-Traffic-Impact-Assessment

Noise and vibration

British Standard 6472-1:2008, *Guide to evaluation of human exposure to vibration in buildings, 2008*, viewed 29 November 2017,
http://bailey.persona-pi.com/Public-Inquiries/M4%20-%20Revised/14.2.10.pdf

Queensland Government, *Application requirements for activities with noise impacts*, Department of Environment and Heritage Protection, 2014, viewed 29 November 2017,
https://www.ehp.qld.gov.au/assets/documents/regulation/era-gl-noise-impacts.pdf

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http://www.ehp.qld.gov.au/assets/documents/regulation/pr-cp-noise-and-vibration.pdf

Air

National Health and Medical Research Council, *Australian Drinking Water Guidelines (2011) – Updated October 2017*, viewed 29 November 2017,
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Queensland Government, *Application requirements for activities with impacts to air*, Department of Environment and Heritage Protection 2015, viewed 29 November 2017,
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Queensland Government, *Policy for Development on Land Affected by Environmental Emissions from Transport and Transport Infrastructure Version 2*, Department of Transport and Main Roads, 2013, viewed 29 November 2017,
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Social

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http://statedevelopment.qld.gov.au/resources/guideline/social-impact-assessment-guideline.pdf

Economic

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Hazard, health and safety

Queensland Government, *Queensland Level Crossing Safety Strategy 2012-2021*, Department of Transport and Main Roads, Brisbane, 2012, viewed 29 November 2017,
https://www.tmr.qld.gov.au/Safety/Rail-safety/Level-crossing-safety

Waste management

Queensland Government, *Application requirements for activities with waste impacts* – viewed 29 November 2017, **http://www.ehp.qld.gov.au/assets/documents/regulation/era-gl-waste-impacts.pdf**